Supplemental Specification
2005 Standard Specification Book

SECTION 02844

CONCRETE BARRIER

Delete Section 02844 and replace with the following:

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Precast concrete barriers: New Jersey shape, full, half, and terminal section.

B. Precast constant slope concrete barrier.

C. Cast-in-place concrete barriers.

1.2 RELATED SECTIONS

A. Section 01554: Traffic Control

B. Section 02842: Delineators

C. Section 03055: Portland Cement Concrete

D. Section 03211: Reinforcing Steel and Welded Wire

E. Section 03390: Concrete Curing

F. Section 03392: Penetrating Concrete Sealer

1.3 REFERENCES

A. ASTM A 36: Carbon Structural Steel

B. ASTM A 325: Standard Specification for Structural Bolts

C. ANSI/AASHTO/AWS D1.5

D. UDOT Quality Management Plan

PART 2 PRODUCTS

2.1 CONCRETE

A. Class AA(AE). Refer to Section 03055.

2.2 STRUCTURAL STEEL

A. Connection pins, connection loops, and stabilization pins. Refer to ASTM A 36.

B. Connection Threaded Rod. Refer to ASTM A 325

2.3 REINFORCING STEEL AND WELDED WIRE FABRIC

A. As specified, refer to Section 03211. Refer to ANSI/AASHTO/AWS D 1.5.

2.4 BARRIER SEAL FOR ALL PRECAST CONCRETE BARRIER

A. Polyester polyurethane open-cell foam 100 percent impregnated with asphalt.

B. Foam unit weight requirements:
   1. Before impregnation: 68 lbs/yd^3 to 85 lbs/yd^3.
   2. After impregnation: 252 lbs/yd^3 to 270 lbs/yd^3.

C. Impregnated asphalt foam returns to 95 percent of its original volume when compressed to 25 percent of its volume and released.

D. Impregnated asphalt foam remains stable at temperatures ranging from -40 degrees F to +150 degrees F.

2.5 CONCRETE BARRIER

A. Use the specified reinforcing steel as per applicable BA Series Standard Drawings, as the reinforcing component. Refer to Section 03211.

B. Hot and cold weather limitations. Refer to Section 03055.

2.6 PRECAST NEW JERSEY SHAPE SECTION AND CONSTANT SLOPE CONCRETE BARRIER

A. Pre-qualify the fabricator as a supplier of precast concrete products in accordance with the Quality Management Plan: Precast-Prestressed Concrete Structures.

B. Mark each barrier with 1½ inch numbers indicating the date of casting and identification number supplied by the inspector. Impress ¼ inch deep into the top center of the barrier.

C. Prevent cracking or damage during handling and storage of precast units. Replace cracked or damaged precast units at no additional cost to the Department.

D. Do not ship until:
   1. 28-day compressive strength acquired.
   2. Cured and sealed according to Section 03390.
   3. Visually inspected and accepted by the Engineer.

2.7 BARRIER DELINEATION

A. Sheeting: Refer to Section 02842.

B. Hardware: Refer to GW Series Standard Drawings.

2.8 SURFACE SEALING MATERIAL FOR ALL BARRIER TYPES

A. Refer to Section 03392.

2.9 EXTRUSION AND SLIP FORM MACHINES FOR CAST-IN-PLACE CONSTANT SLOPE BARRIER

A. Capable of vertical adjustment to the grade line while in forward motion.

B. Use equipment with an attached grade line gauge or pointer to make a continual comparison with the barrier being placed and the offset guideline.

PART 3 EXECUTION

3.1 PREPARATION

A. Site considerations:
   1. Protect work area when removing traffic barriers and crash cushions until the barriers and crash cushion are reconstructed or the hazard is mitigated. Refer to Section 01554.
   2. Precast Concrete Barrier: Complete grading requirements and place any required paved surfaces as per BA Series Standard Drawings before installing barrier. Complete grading requirements prior to installation of barrier or crash cushions reference CC Series Standard Drawings.

B. For cast-in-place constant slope protection:
   1. Before applying curing compound, give the surface a final soft brush finish with strokes parallel to the line of barriers.
   2. Do not finish with a brush application of grout.
   3. Refer to Section 03392.
   4. Complete grading requirements prior to installation of crash cushions reference CC Series Standard Drawings.

3.2 PRECAST CONCRETE FULL BARRIER (NEW JERSEY SHAPE) AND CONSTANT SLOPE CONCRETE BARRIER

A. Installation includes moving, stockpiling, and placing all barriers.

B. Place seal between each barrier unit so that enough pressure is exerted on the sealing material to form and maintain a permanent bond.

C. Conform to BA Series Standard Drawings.

D. Tighten X-connection bolt until snug and then add one turn.

3.3 CAST-IN-PLACE CONSTANT SLOPE CONCRETE BARRIER

A. Obtain Engineer approval before placing the barrier.

B. Conform to BA Series Standard Drawings.

C. Fixed forms: Do not use precast mortar blocks to support the reinforcing steel.

D. Constant slope barrier placed by extrusion or slip form:
   1. Provide an offset guideline for the extrusion or slip form machine to maintain the predetermined grade.
   2. Feed concrete to the extrusion or slip form machine at a uniform rate.
   3. Operate machine, uniformly restraining forward motion.
      a. Produce well-compacted, dense concrete with consistency that maintains the shape of the barrier without support.
      b. Produce a well-compacted mass of concrete free from surface pits larger than 1 inch in diameter and requiring no further finishing.
   4. Saw or form joints before applying curing compound.

E. Curing: Refer to Section 03390.

F. Penetrating Concrete Sealer:
   1. Application rate based on resident content at a coverage rate of 0.11 lbs/yd^2.
   2. Apply according to the manufacturer's recommendation for horizontal, vertical, and all surfaces.
   3. Select a sealer with maximum drying time of 1½ hours.

3.4 DELINEATION HARDWARE

A. Concrete Barrier: Attach L Barrier Reflector. Refer to GW Series Standard Drawings.

B. Attachment Location: Refer to BA Series Standard Drawings.

C. Application: Refer to GW Series Standard Drawings.

END OF SECTION